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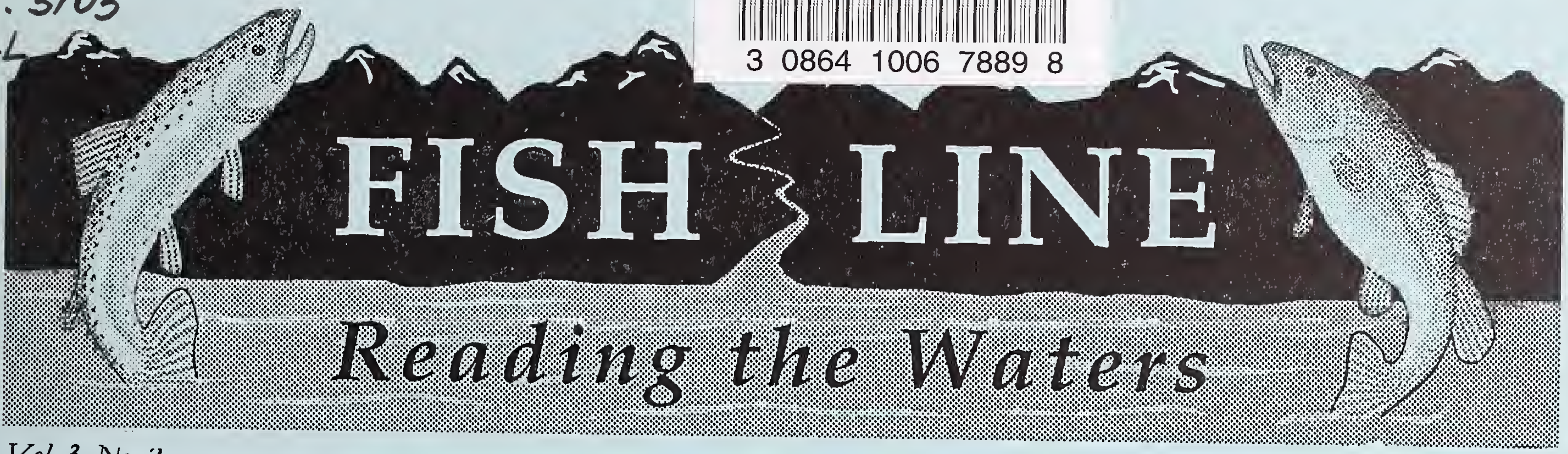

FISH LINE

Reading the Waters

Vol. 3, No. 2

October 1991

BUCKET BIOLOGY

Managing Fish with a Bucket...

Three years ago, one could watch several thousand grayling jam into the Rogers Lake inlet in the annual spring spawning rites. One could watch with delight as they thrashed about in the shallow water, looking like miniature sailfish with their distinctive fan-like dorsal fins flashing brilliant turquoise and salmon-colored streaks. Dozens came to admire the spectacle. Hatchery workers, with just a few scoops of net, were able to gather enough fish to supply eggs for Montana's entire planting program. The fishing off the mouth of the inlet was some of the best around.

This spring, the stream was eerily vacant. The grayling were gone in just two short years. They were the victims of three successive illegal transplants that introduced rainbow cutthroat hybrids, brook trout, and yellow perch.

The perch were the final straw. The lake produced good trout for a while, then produced jumbo perch for two years. Now only stunted 4" perch remain.

Gone, sadly, are the grayling, one of only four populations in northwestern Montana. Gone, also, is the spring spawning spectacle, the great fly-fishing, the easy egg supply. Only a ruined fishery remains.

The most likely solution is to start over by poisoning the fish out of the lake, a move that will cost at least $25,000 from anglers' license fees. All because someone thought they had a better idea.

Unfortunately, this scenario is played out every day across the United States. The Department of Fish, Wildlife and Parks now has documented over 160 illegal transplants across the state. Undoubtedly, there have been many hundreds of more illegal introductions that didn't take. Gamefish, rough fish, warmwater fish, coldwater fish—you name them, they've been moved around. Some transplants are unintentional—a bait bucket dumped overboard or fish escaping from a private pond. Other introductions are more malicious, placed there by someone who wants to "have it all" in the angler's favorite stream or lake.

This does not mean that all fish introductions are inherently bad. Introduced species are the cornerstones of many of Montana's most noted fisheries. But even the best planned, well-intentioned introductions can have unexpected results. Poorly planned or illegal introductions can cause disasters. Consider these problems that can occur:

- competition for food and space with existing fish;
- interbreeding or disruption of spawning with existing fish;
- introduction of new diseases and parasites;
- alteration of aquatic habitat, and;
- less fishing opportunity and higher management costs for anglers.

Fish have the same biological controls as other animals. Just as you wouldn't run twice as many cows as a pasture can handle, or mix lions and tigers with the cattle, people have to understand that if you mix too many fish, or the wrong kinds of fish, something will have to give. This usually manifests itself through lower growth rates or higher mortality.

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Because of all the potential problems, environmental assessments or impact statements are now required for all planned introductions. Factors examined include biological and social impacts, access, and economics. Those with little patience and a bucket can bypass the whole process—hence the term "bucket biology." Ironically, these so called "bucket biologists" also hurt themselves. Fish biologists contemplating the introduction of new species to satisfy public demand have to face the certainty that the fish will venture beyond the point of which they're planted. If the potential impacts are great enough, biologists have to decide against the introduction and anglers are denied new opportunities.

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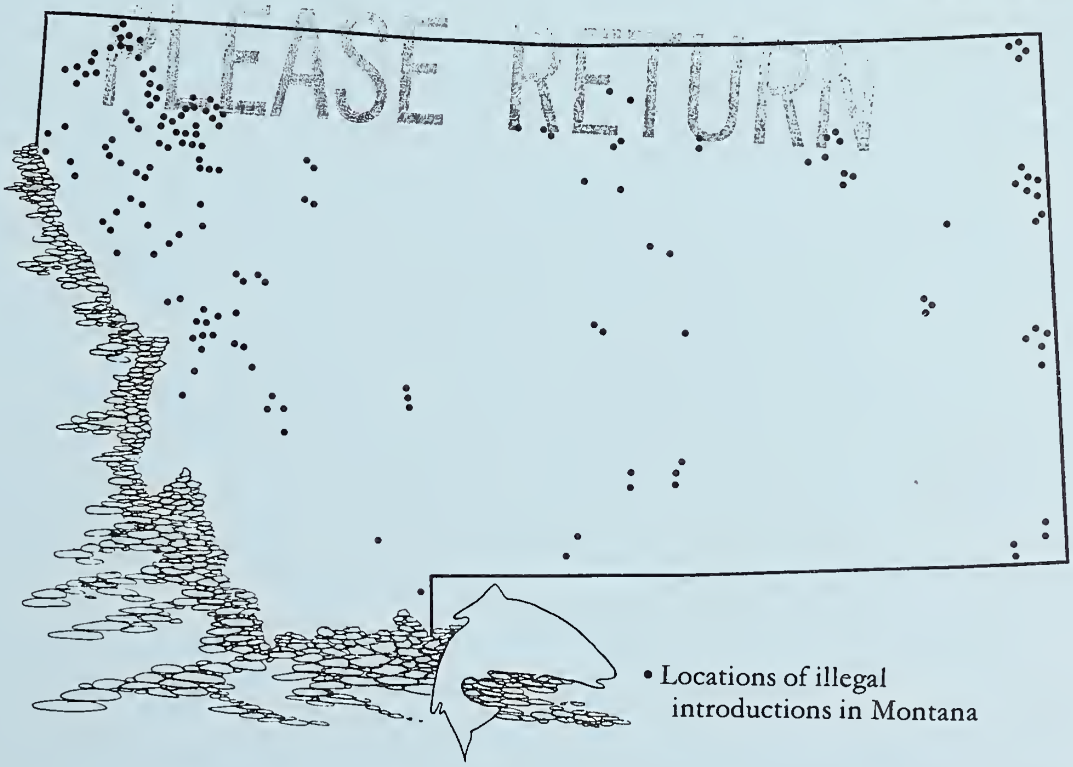

PLEASE RETURN

• Locations of illegal introductions in Montana

Produced by the Helena Fisheries Division of the Department of Fish, Wildlife and Parks.

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BUCKET BIOLOGY

Continued

The biggest expense in many of these waters is the cost of rehabilitating the pond or lake. In some cases a pond or small lake can be drained to remove the unwanted fish. In other instances, we can apply a chemical fish control agent to kill most of all of the existing populations and then restock as soon as possible. When rehabilitating of a water body with a chemical is possible, it often costs thousands of dollars and does not provide any guarantee that all the undesirable fish will be eliminated. In many instances, chemical rehabilitation is not even possible due to the size of the water body or other factors.

Following are just a few examples on how illegal transplants cost anglers in increased license fees and reduced fishing opportunities.

WESTERN FISHING DISTRICT

The Western Fishing District includes all waters in Montana west of the Continental Divide.

Carp were introduced into the Missouri River drainage in the late 1800s and have since wreaked havoc by muddying waters, destroying aquatic vegetation, eating fish eggs and competing for food and space.

Several years ago fish biologists were dismayed to find a thriving population of carp in a pond in the upper Clark Fork of the Columbia drainage. The problem was quickly solved by poisoning the pond, but a carp escape to the drainage could have contaminated 640 miles of the Clark Fork, Bitterroot, and Blackfoot rivers. Walleye, northern pike, and smallmouth bass have all recently appeared illegally and the long-term impacts on this troubled system are unknown at this time.

Upsata Lake (near Lincoln) was rehabilitated 30 years ago to remove stunted perch and has since produced good trout fishing. Perch reappeared several years ago and quickly stunted again. MDFW&P went to considerable expense to plant predacious rainbows and bass and had to close the lake to fishing for a year to give the predators a chance to make headway. Unfortunately, recovery efforts could be jeopardized by the recent appearance of northern pike in the lake.

Northern pike were first illegally planted in western Montana in 1953 and have since spread to 61 waters in every drainage west of the Divide. Although northern pike produce some good fishing, they have also been implicated in the disappearance of bass, trout, and yellow perch when placed in the wrong waters. Pike made their most recent appearance in the upper Clearwater River drainage.

CENTRAL FISHING DISTRICT

The Central Fishing District includes all waters in the central part of Montana.

Utah chubs were introduced into Hebgen Reservoir in the mid-1930s, probably as bait. Since then, they've spread in great numbers as far downstream as Canyon Ferry Reservoir. They compete directly with trout for food, decreasing trout growth rates and possibly decreasing trout survival. They are also regarded as a nuisance by anglers.

Around 1960, Duck Lake north of Browning was regarded as one of the premier rainbow trout lakes in the nation. Suckers, probably introduced illegally as bait, infested the lake and soon accounted for 90 percent of the fish biomass. Trout numbers and growth decreased dramatically. The U.S. Fish and Wildlife Service spent $20,000 on rehabilitation projects and trout growth and numbers have picked up considerably. But the problem is only controlled, not eliminated, and it will require continual management and expenditures.

Buffalo Wallow Reservoir northeast of Lewistown produced very good rainbow fishing until yellow perch appeared. The perch soon stunted out and the fishing there is now poor. Reservoir rehabilitation will either be very expensive and/or require drawdown of the reservoir, so no immediate solution is in sight.

EASTERN FISHING DISTRICT

The Eastern Fishing district includes all waters lying east of the Central Fishing District.

The appearance of northern pike in Beaver Creek Reservoir in Hill County required a change in management stragegies that required planting more expensive, catchable-size trout. The recent appearance of yellow perch may further raise the cost of managing fish in the reservoir.

Broadview Pond in Yellowstone County was once a very clear pond with large crappie. Illegally introduced carp muddied the pond to the point where productivity declined. A rehabilitation attempt in 1983 was unsuccessful.

Illegal yellow perch introduction ruined a good trout fishery in the Dredge Cut Trout Pond in Valley County. The reservoir was subsequently converted to a warmwater fishery comprising of northern pike, walleye, and largemouth bass. In an ironic twist, a recent illegal introduction of bluegills has severely impacted the size of the yellow perch.

Gartside Reservoir near Sidney has been rehabilitated three times over the past 25 years to remove black bullheads, yellow perch, carp, suckers, and pumpkinseed sunfish. Nonetheless, more illegal species show up after each rehabiltation attempt.

The problem is serious and wide-ranging enough that many states are now launching educational programs. The Montana Department of Fish, Wildlife and Parks has produced a brochure, "Illegal Introductions, A Fishery Manager's Nightmare," and has published a number of articles such as this. If education is not enough, anglers should be reminded that even the transport of live fish is illegal in many instances. The last Legislature addressed the problem with a new law that will significantly increase penalties with higher fines, loss of hunting and fishing privileges, and restitution, including the cost of removing illegal fish which could run into thousands of dollars. You could do everyone a favor by examining your own practices, educating your fishing buddies, and reporting suspected activities to a FW&P employee or by calling TIP-MONT (1-800-847-6668).

Make sure that the only buckets full of fish are full of dead fish, headed for your freezer.

Purple Loosestrife

PURPLE LOOSESTRIFE

A Problem Plant

Native aquatic plants are important as food and shelter for fish, fish food organisms, waterfowl, and other wildlife species. Yet, several exotic plant species present a threat to Montana's fish and wildlife resources. Like other noxious weeds that occur on range and farmlands, aquatic weeds spread rapidly, choke out native vegetation and can render entire streams, lakes and wetlands useless for any purpose.

Two plants of special concern for Montanans are Purple loosestrife (Lythrum salicaria) and Eurasian water milfoil (Myriophyllum spicatum). Each of these plants are aggressive invaders that have caused multimillion dollar impacts in other states. Neither of these plants has achieved wide-spread distribution in Montana, but the potential is there. As such, an aggressive prevention effort is needed to avoid the losses suffered elsewhere.

Purple loosestrife is an exotic perennial plant that infests wetlands. It has been found in flood plains, along drainage ditches, and on the edge of marshes in several locations in Montana. The plants reproduce from its roots, from plant fragments, and by seed.

Once established, purple loosestrife can rapidly form a dense vegetative cover that excludes use by waterfowl, muskrats, and other wetland inhabitants. Early stages of infestation may be easily eliminated, but heavy infestations require extensive chemical treatment and mechanical mowing. The costs to control established infestations are very high. As an example, severe infestations in Minnesota have cost several million dollars per year to control.

Purple loosestrife produces an attractive tall spike of red-purple flowers. Nurserymen have cultivated purple loosestrife as an ornamental plant for gardens and landscaping. Montana and other states are now educating and alerting nurserymen and gardeners to the hazards associated with the plant.

ZEBRA MUSSEL: An Incalculable Threat

A new exotic pest, **the zebra mussel**, has become established in the Midwestern Great Lakes and now poses a serious threat to all waters on the continent.

A tiny mollusk, or "clam," the zebra mussel forms dense colonies that clog water intakes, foul boat motors, damage hydroelectric facilities, and litter beaches with razor sharp shells. The mussels feed by filtering water, a habit that can disrupt freshwater ecosystems and interfere with recreational and commercial fisheries. In fact, scientists and engineers in the Great Lakes region have ranked the zebra mussel invasion as one of the most challenging environmental problems of the 1990s.

Zebra Mussel

The zebra mussel is believed to have entered the Great Lakes when transoceanic ships discharged ballast water taken on from a European freshwater port. Since their discovery in 1988, the mussels have spread quickly to infest most of the waters in the Great Lakes. Resource agencies have estimated the zebra mussel will cause more than $2 billion damage in the Great Lakes region during the next decade.

The likelihood of the zebra mussel spreading from the Great Lakes to inland waters of other states is almost a certainty. That zebra mussels already have been found in other states is an indication of their potential for movement.

The mollusks are easily transported as adults (maximum size - 1 1/2") or as larvae (microscopic in size). Adults may live for up to two weeks, or more, out of water and may be transported on boat hulls or boat trailers, in boat motors, or on other water sports equipment. The larvae may be transported in live wells, bait containers and any other part of the boat or trailer that may hold a small amount of water. Once established, the zebra mussel multiplies rapidly, with individuals producing up to 40,000 eggs per year. Mussel densities of 30 to 60 individuals per square inch can be expected.

Resource agencies throughout the Great Lakes region have coordinated their efforts to slow the spread of this pest and to conduct research to find control methods. Their information has been made available to Montana and other states to help minimize the impact.

Montana has many visitors from the Great Lakes region and many Montanans travel to the Great Lakes for fishing or other water-based recreational activities. The potential for these travelers to bring the zebra mussel to Montana is very real.

Anglers, recreational boaters, wind surfers, and all others who use our waterways can help prevent the introduction of zebra mussels to Montana. Before entering Montana waters from areas infected with zebra mussels, you can help prevent the introduction of zebra mussels by doing the following:

- Clean your boat hull thoroughly and scrape off any attached mussels. Early life stages may not be seen easily, but they produce a rough feeling on the boats smooth surface.
- Flush clean water through the cooling system of your motor.
- Drain all bilge water, live wells, bait containers, and engine compartments. Make sure water is not trapped in your trailer.
- Disinfect all live wells, bilges, anchors and anchor ropes, bait buckets, and boat trailers with a 1:10 solution of bleach and water.
- Be certain that your flushing and disinfectant water does not enter a lake or stream.

Educational efforts by all recreationists, marina operators, and government agencies can help to prevent or reduce the threat of introducing this and other exotic species.

TIP
MONT

Turn in suspected illegal introductions

Cash Rewards
Remain Anonymous

1-800-847-6668

EURASIAN MILFOIL

An Aggresive Water Weed

Eurasian milfoil is a true aquatic plant that has become established in some waterways of the Pacific Northwest. This aggressive waterweed forms dense mats of submerged vegetation, so thick that fishing, boating, and swimming become impossible. In some instances, milfoil growth has clogged irrigation pumps and hindered hydroelectric power generation.

No effective methods have been found to eradicate milfoil. Control efforts involve costly mechanical mowing or the use of machines that dig the plants up by the roots. These temporary controls must be repeated at 2 to 3 year intervals.

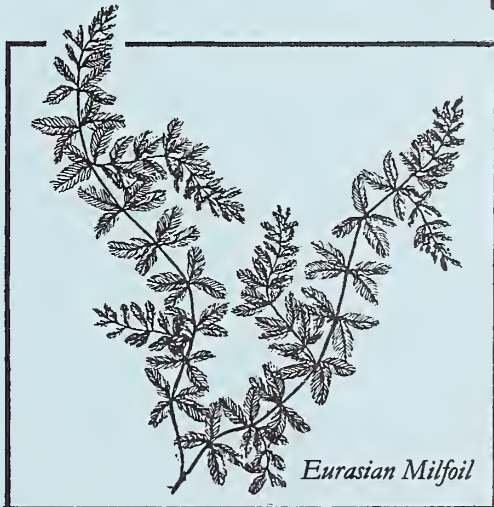
Montana doesn't presently have documented infestations of Eurasian milfoil, but the potential of its transfer from nearby waterways exists. Milfoil is readily spread between rivers and lakes by boaters carrying plant fragments on their boat, boat trailers and motors. A single small milfoil fragment could easily multiply to infest an entire body of water.

Montanans can help to prevent serious infestations by these exotic weeds.

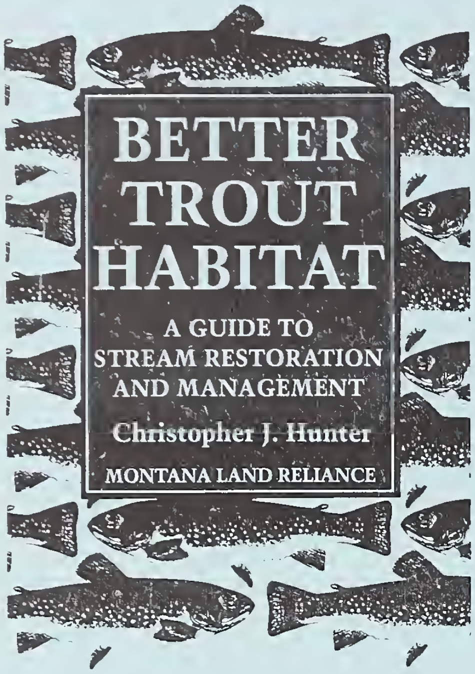
Hunters and anglers can learn to recognize Purple loosestrife and Eurasian milfoil and report any evidence of the plants to their county weed office, agriculture extension agent, or the Department of Fish, Wildlife and Parks.

Sportsman's organizations can assist by informing their members of the problem and aiding in the educational effort.

Boaters can help prevent the spread of Eurasian milfoil by removing all aquatic plants from boats, boat trailers, anchor lines, bait containers, and any water recreation equipment.



Eurasian Milfoil



BETTER TROUT HABITAT

A Guide to Stream Restoration and Management

By Chris Hunter
Edited by Tom Palmer
Illustrated by Ellen Meloy

Better Trout Habitat gives the angler, as well as the professional, an up-to-date review of the art of trout stream restoration. Chapters 1 through 6 describe: trout habitat needs; how trout habitat is formed through the interaction of flowing water; geology and vegetation; and methods for measuring habitat and interpreting those measurements. Chapters 7 through 9 examine 14 case histories of restoration projects from around the United States. Chapter 10 gives the reader some concluding thoughts on stream-restoration management and protection.

The word *management* is a recurring theme throughout the book. Chris Hunter uses this word to show the importance of land use to trout habitat degradation and restoration. The author explains the delicate balance of forces at work in trout streams, and is often upset by poor land use practices. He provides evidence to show that structural attempts alone, to restore habitat, are doomed to failure unless changes in land use occur, as well.

Better Trout Habitat is easy to read and understand, yet it reflects the latest in scientific thought on the subject.

Chris Hunter is an aquatic ecologist living in Helena, Montana.

Montana Land Reliance, the books's brainchild, is Montana's only private statewide land trust dedicated to protecting and enhancing the public benefits of Montana's private lands.

Island Press, 320 pages, 1991
Illustrations, glossary, index
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1-800-828-1302

If you would like to share your views or offer suggestions, please send them to use FISH LINE, Department of Fish, Wildlife and Parks, Fisheries Division, 1420 East Sixth Avenue, Helena, MT 59620, (406) 444-2449.

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Calendar of Events October 1991 - December 1991

October 1, 1991	Area I Conservation District Meeting, Glasgow
October 2, 1991	Area II Conservation District Meeting, Miles City
October 3, 1991	Area IV Conservation District Meeting, Roundup
October 18, 1991	Fish, Wildlife and Parks Commission Meeting, Glasgow
November 8, 1991	Fish, Wildlife and Parks Commission Meeting, Helena Adopt Final Fishing Regulations Commercial Fishing Regulations
November 13-15, 1991	Conservation Districts State Convention, Butte
November 30, 1991	General Fishing Season Ends
December 13, 1991	Fish, Wildlife and Parks Commission Meeting, Helena Adopt Final Commercial Fishing Regulations

Produced by the Helena Fisheries Division of the Department of Fish, Wildlife and Parks.

MONTANA STATE UNIVERSITY
BOZEMAN, MT 59717-0001

Montana Department of Fish, Wildlife & Parks